THE REAL PRICE OF KNOWLEDGE: A GLOBAL DATA ANALYSIS ON THE TRUE COST OF STUDYING ABROAD

BY

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INTRODUCTION

Beyond tuition lies a hidden world of expenses: rent, insurance, living costs, and currency strength. In this study, I explore how much it truly costs to chase knowledge across borders — and what factors make education affordable (or not).

This analysis is based on real data from the Cost of International Education Dataset, and it reveals surprising insights into how location, duration, and exchange rates shape the global education economy.

(a) Objective

Higher education abroad can be a life-changing opportunity — but it comes with financial challenges that vary widely from one region to another.
This project explores the Cost of International Education Dataset, revealing how tuition, living costs, rent, visa fees, and currency strength collectively shape the real cost of studying abroad.

(b) Problem Being Addressed

Students often underestimate total expenses when choosing universities overseas. This analysis aims to help students, consultants, and scholarship providers make informed choices by uncovering the financial realities behind global study destinations.

(c) Key Datasets and Methodologies

- **Dataset:** Cost of International Education (Kaggle, 2023)
- **Tool Used:** Microsoft Excel (Pivot Tables, Dashboards & Visualizations)
- **Methodology:** Data cleaning, transformation, cost modeling, and comparative regional analysis
- **Key Question:** *Is there really any price for knowledge?*

STORY OF DATA

(a) Data Source

- Source: Kaggle — *Cost of International Education Dataset*
- Year Covered: 2023
- Records: 908 rows | 12 columns

(b) Data Collection Process

Data was gathered from public sources including university websites and education platforms, focusing on tuition, rent, visa, and cost-of-living metrics.

(c) Data Structure

Each record represents a combination of country, city, and university program, featuring:

- Tuition Fee (USD)
- Living Cost Index
- Rent
- Visa & Insurance Costs
- Exchange Rate

(d) Important Features and Their Significance

- **Tuition Fee:** Core financial investment.
- **Living Cost Index:** Captures day-to-day affordability.
- **Exchange Rate:** Reflects real purchasing power.
- **Program Duration:** Determines total expense exposure.

(e) Data Limitations

1. Covers 2021–2023; recent fluctuations may not appear.
2. Missing demographic details (degree level, age, etc.).
3. Limited coverage of rural or smaller universities.
4. Based on public averages — may not mirror individual experience.
5. Exchange rate changes may affect cost accuracy.

DATA SPLITTING AND PREPROCESSING

(a) Data Cleaning

- Removed duplicates and blanks.
- Rounded exchange rates to two decimals.

(b) Handling Missing Values: There wasn't any missing data.

(c) Data Transformation

Added key computed fields:

1. **Monthly Estimated Living Cost:** Formula: =([@[Living_Cost_Index]]/123.3)*1850.
    - Based on a baseline of $1,850 (Namrata Sukhtankar, 2023) and a living cost index of 123.3 (Data Pandas, 2023).
2. Annual Living Cost: Formula used = Monthly Estimated Living * 12.

3. Exchange Rate Marker: Categorized into *Strong*, *Medium*, and *Weak* currencies; Formula: =IF([@[Exchange_Rate]]<5,"Strong Currency",IF([@[Exchange_Rate]]<=1000,"Medium Currency","Weak Currency")).
4. Years Column: Combined duration into a readable format (e.g., "4 years").

(d) Data Splitting

Segmented by country, program duration, and program level (Bachelor's, Master's, PhD) for comparative analysis.

(e) Industry Context

Global education has become a billion-dollar industry, with cost transparency now a deciding factor for students choosing where to study.

(f) Stakeholders

- Prospective Students
- Educational Consultants
- Admissions Officers
- Scholarship Organizations

(g) Value to the Industry

This analysis provides data-driven insights to guide financial planning, improve cost transparency, and support policy-making in international education.

Country	City	University	Program	Level	Duration_Years	Tuition_USD	Living_Cost_I	Rent_USD	Visa_Fee_USD	Insurance_USD	Exchange_Rate
USA	Cambridge	Harvard University	Computer Science	Master	2	55400	83.5	2200	160	1500	1
UK	London	Imperial College London	Data Science	Master	1	41200	75.8	1800	485	800	0.79
Canada	Toronto	University of Toronto	Business Analytics	Master	2	38500	72.5	1600	235	900	1.35
Australia	Melbourne	University of Melbourne	Engineering	Master	2	42000	71.2	1400	450	650	1.52
Germany	Munich	Technical University of Munic	Mechanical Engineering	Master	2	500	70.5	1100	75	550	0.92
Japan	Tokyo	University of Tokyo	Information Science	Master	2	8900	76.4	1300	220	750	145.8
Netherlands	Amsterdam	University of Amsterdam	Artificial Intelligence	Master	1	15800	73.2	1500	180	720	0.92
Singapore	Singapore	National University of Singap	Finance	Master	1.5	35000	81.1	1900	90	800	1.34
France	Paris	Sorbonne University	International Relations	Master	2	4500	74.6	1400	99	650	0.92
Switzerland	Zurich	ETH Zurich	Physics	Master	2	1460	91.5	2100	88	1200	0.89
Sweden	Stockholm	KTH Royal Institute	Sustainable Technology	Master	2	0	71.8	1200	110	400	10.45
Denmark	Copenhagen	University of Copenhagen	Bioinformatics	Master	2	0	73.4	1300	120	450	6.92
China	Beijing	Tsinghua University	Computer Engineering	Master	2.5	8900	52.3	800	140	400	7.18
South Korea	Seoul	Seoul National University	Digital Media	Master	2	7200	68.7	900	130	500	1320.5
Ireland	Dublin	Trinity College Dublin	Data Analytics	Master	1	28900	72.9	1600	150	650	0.92
South Korea	Busan	Pusan National University	Business	Bachelor	4	5900	62.4	700	130	500	1320.5
New Zealand	Auckland	University of Auckland	Marine Biology	Bachelor	3	28500	69.8	1200	245	600	1.64
Austria	Vienna	University of Vienna	Social Sciences	Bachelor	3	1500	67.4	950	160	500	0.92
Belgium	Brussels	KU Leuven	Biomedical Sciences	Bachelor	3	3500	68.9	1000	180	550	0.92
USA	Ann Arbor	University of Michigan	Aerospace Engineering	Bachelor	4	52300	72.5	1800	160	1500	1
USA	Atlanta	Georgia Tech	Industrial Engineering	Bachelor	4	43800	71.5	1700	160	1500	1
USA	Austin	UT Austin	Chemical Engineering	Bachelor	4	40900	72.4	1600	160	1500	1
UK	Bristol	University of Bristol	Mathematics	Bachelor	3	31200	69.8	1100	485	800	0.79
Canada	Ottawa	University of Ottawa	Political Science	Bachelor	4	28900	68.5	1300	235	900	1.35
Hong Kong	Hong Kong	HKUST	Finance	Bachelor	4	22000	78.6	1500	120	600	7.82

Image I: Dataset before Data Preprocessing

Country	City	University	Program	Leve	ration	Years	Tuition_US	ving_Cost_	Rent_US	isa_Fee	Insurance_U	Exchange_	ffordability_ma	_Estimated_	stimated	Total_C
USA	Cambridge	Harvard University	Computer Scienc	Ph.D	2	2 years	$55,400	83.5	$2,200	$160	$1,500	1.00	Strong Currency	$1,253	$15,034	$74,294
UK	London	Imperial College Lon	Data Science	Bachelor	1	1 years	$41,200	70	$1,800	$485	$800	1.10	Strong Currency	$1,050	$12,603	$56,888
Canada	Toronto	University of Toronto	Business Analytic	Ph.D	2	2 years	$38,500	72.5	$1,600	$235	$900	1.35	Strong Currency	$1,088	$13,054	$54,289
Australia	Melbourne	University of Melbour	Engineering	Master	2	2 years	$42,000	71.2	$1,400	$450	$69	1.52	Strong Currency	$1,068	$12,819	$56,738
Germany	Munich	Technical University	Mechanical Engin	Master	2	2 years	$500	70.5	$1,100	$100	$550	1.01	Strong Currency	$1,058	$12,693	$14,943
Japan	Tokyo	University of Tokyo	Information Scien	Master	2	2 years	$8,900	76.4	$1,300	$220	$750	145.80	Medium Currency	$1,146	$13,756	$24,926
Netherlands	Amsterdam	University of Amsterd	Artificial Intelliger	Master	1	1 years	$15,800	73.2	$1,500	$180	$101	0.92	Strong Currency	$1,098	$13,180	$30,761
Singapore	Singapore	National University of	Finance	Master	1.5	1.5 years	$35,000	81.1	$1,900	$90	$800	1.34	Strong Currency	$1,217	$14,602	$52,392
France	Paris city tower	Sorbonne University	International Rela	Master	2	2 years	$4,500	74.6	$1,400	$99	$650	0.92	Strong Currency	$1,119	$13,432	$20,081
Switzerland	Zurich	ETH Zurich	Physics	Master	2	2 years	$1,460	91.5	$2,100	$88	$1,200	0.89	Strong Currency	$1,373	$16,474	$21,322
Sweden	Stockholm	KTH Royal Institute	Sustainable Techr	Master	2	2 years	$100	71.8	$1,200	$110	$400	10.45	Medium Currency	$1,077	$12,927	$14,737
Denmark	Copenhagen	University of Copenh	Bioinformatics	Master	2	2 years	$0	73.4	$1,300	$120	$450	6.92	Medium Currency	$1,101	$13,216	$15,086
China	Beijing	Tsinghua University	Computer Engine	Master	2.5	2.5 years	$8,900	52.3	$800	$140	$400	7.18	Medium Currency	$785	$9,417	$19,657
South Korea	Seoul	Seoul National Unive	Digital Media	Master	2	2 years	$7,200	68.7	$900	$130	$500	1320.50	Weak Currency	$1,031	$12,369	$21,099
Ireland	Dublin	Trinity College Dublin	Data Analytics	Master	1	1 years	$28,900	72.9	$1,600	$150	$650	0.92	Strong Currency	$1,094	$13,126	$44,426
South Korea	Busan	Pusan National Unive	Business	Bachelor	4	4 years	$5,900	62.4	$700	$130	$500	1320.50	Weak Currency	$936	$11,235	$18,465
New Zealand	Auckland	University of Auckland	Marine Biology	Bachelor	3	3 years	$28,500	69.8	$1,200	$245	$600	1.64	Strong Currency	$1,047	$12,567	$43,112
Austria	Vienna	University of Vienna	Social Sciences	Bachelor	3	3 years	$1,500	67.4	$950	$160	$500	0.92	Strong Currency	$1,011	$12,135	$15,245
Belgium	Brussels	KU Leuven	Biomedical Scien	Bachelor	3	3 years	$3,500	68.9	$1,000	$180	$550	0.92	Strong Currency	$1,034	$12,405	$17,635
USA	Ann Arbor	University of Michigar	Aerospace Engine	Bachelor	4	4 years	$52,300	72.5	$1,800	$160	$1,500	1.00	Strong Currency	$1,088	$13,054	$68,814
USA	Atlanta	Georgia Tech	Industrial Enginee	Bachelor	4	4 years	$43,800	71.5	$1,700	$160	$1,500	1.00	Strong Currency	$1,073	$12,873	$60,033
USA	Austin	UT Austin	Chemical Enginee	Bachelor	4	4 years	$40,900	72.4	$1,600	$160	$1,500	1.00	Strong Currency	$1,086	$13,036	$57,196
UK	Bristol	University of Bristol	Mathematics	Bachelor	3	3 years	$31,200	69.8	$1,100	$485	$800	0.79	Strong Currency	$1,047	$12,567	$46,152
Canada	Ottawa	University of Ottawa	Political Science	Bachelor	4	4 years	$28,900	68.5	$1,300	$235	$900	1.35	Strong Currency	$1,028	$12,333	$43,668
Hong Kong	Hong Kong	HKUST	Finance	Bachelor	4	4 years	$22,000	78.6	$1,500	$120	$600	7.82	Medium Currency	$1,179	$14,152	$38,372
Portugal	Lisbon	University of Lisbon	Architecture	Bachelor	3	3 years	$3,500	58.4	$800	$120	$450	0.92	Strong Currency	$876	$10,515	$15,385
Israel	Tel Aviv	Tel Aviv University	Computer Scienc	Bachelor	3	3 years	$12,000	76.2	$1,200	$150	$800	3.72	Strong Currency	$1,143	$13,720	$27,870
Taiwan	Taipei	National Taiwan Univ	Electronics Engine	Bachelor	4	4 years	$5,200	62.8	$700	$140	$450	31.20	Medium Currency	$942	$11,307	$17,797
Czech Republic	Prague	Charles University	Medicine	Bachelor	3	3 years	$9,800	54.6	$650	$100	$400	22.50	Medium Currency	$819	$9,831	$20,781

Image II: Dataset after Data Preprocessing

The following pre-analysis, in-analysis and post-analysis insights are displayed in the International student cost report dashboard below:

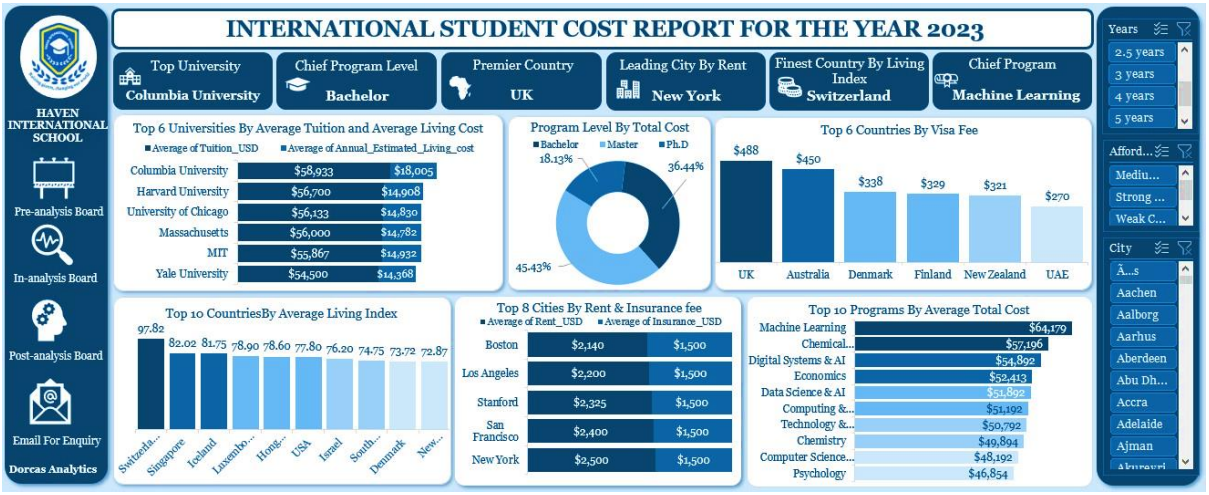

Image III: International Student Cost Report Dashboard

PRE-ANALYSIS

(a) Key Trends

- Western Europe and North America have the highest total costs.
- Asian countries offer more cost-effective programs.
- One-year master's programs reduce living expenses but often charge higher tuition.

(b) Potential Correlations

- Weaker currencies = lower total study costs.
- Longer programs = higher cumulative living expenses.

- Exchange rate stability strongly affects affordability.

(c) Initial Insights

Singapore, China, and Argentina are emerging as affordable, high-quality study destinations — especially for tech and finance programs.

IN-ANALYSIS

(a) Unconfirmed Insights

Early trends suggested higher tuition meant higher affordability; further analysis revealed that exchange rates and living costs were just as influential.

(b) Initial Recommendations

- Evaluate total cost-to-duration ratio, not just tuition.
- Consider the currency strength and local living index before applying.

(c) Excel Techniques Used

- Pivot Tables for cost aggregation
- Conditional Formatting for region highlights
- Formulas for calculated fields
- Charts and Dashboards for comparative visual insights

POST-ANALYSIS AND INSIGHTS

(a) Key Findings

One-Year Master's Programs

- Countries: UK, Netherlands, Ireland
- Highest Living Index: Netherlands (73.2)
- Fields: Data Science, Cybersecurity, Analytics
- Visa Fees: UK ($485), Netherlands ($180), Ireland ($160)

1.5-Year Master's Programs

- Country: Singapore (National University of Singapore)
- Tuition: ~$35,000 | Living Cost: ~$14,602 | Total: ~$52,392
- Field: Finance

Two-Year Master's Programs

- Countries: USA (MIT, Columbia), Switzerland
- Switzerland Living Index: 100.12 (highest globally)
- Fields: Economics, Data Science

2.5-Year Master's Programs

- Country: China (Tsinghua, Shanghai Jiao Tong)
- Visa: $140 | Living Index: 50.03
- Fields: Computer Engineering, AI

Three-Year Bachelor's Programs

- Countries: UK, Australia
- Average Cost: $40,968–$50,808
- Fields: Business, Engineering, Computer Systems

Four-Year Bachelor's & PhD Programs

- Countries: USA, Switzerland, Australia
- Fields: Aerospace & Chemical Engineering

Five-Year PhD Programs

- Countries: USA, Argentina
- Fields: Electrical Engineering (~$72,640), Physics (~$71,138)

(b) Comparison with Initial Findings

Initial assumptions focused on tuition as the main driver. Post-analysis revealed **living costs** and **currency strength** often outweigh tuition differences in total affordability.

DATA VISUALIZATIONS & CHARTS

Charts Used in Excel Dashboard:

- **Bar Charts:** Displays top 10 program by average total cost.
- **Column Charts:** Displays top 6 countries by visa fee and top 10 countries by average living index.
- **Pie Charts:** Display program level by total cost.
- **100% Stacked Combo chart:** Displays top 8 cities by rent & insurance fee.
- **Stacked bar chart:** Displays top 6 universities by average tuition and average living cost.

RECOMMENDATIONS AND OBSERVATIONS

(a) Actionable Insights

For Educational Consultants & Advisors

- Emphasize program length vs. total cost trade-offs (e.g., UK one-year master's = fast but expensive).
- Provide city-level breakdowns (rent, insurance) for realistic cost planning.

For College Admissions Advisors

- Help students balance return on investment (ROI) and career opportunities when choosing programs.
- Integrate cost-of-living data into application guidance and financial planning.
- Offer visa process support—costs vary significantly by country.

For Recent Graduates

- Evaluate programs not just by tuition, but by total cost-to-duration ratio.
- Choose countries with strong post-graduation employment markets.
- Consider alternative hubs (Singapore, China) for affordable quality education.

For Scholarship Organizations

- Target high-cost, high-impact programs (e.g., UK/US Master's & PhDs).
- Prioritize in-demand fields like Data Science, AI, Cybersecurity, and Engineering.
- Create scholarships encouraging study in emerging economies to diversify talent pipelines.

(b) Optimizations or Business Decisions

- Integrate cost-of-living tools into university portals.
- Scholarship organizations can prioritize **high-cost, high-impact programs** (e.g., UK/US Master's, PhDs).
- Encourage study in **emerging, affordable economies** (e.g., Singapore, China, Argentina).

(c) Unexpected Outcomes

- Asia is fast becoming a top-quality, low-cost education hub.
- Shorter programs aren't always cheaper — tuition intensity can offset living cost savings.

CONCLUSION

The findings are clear: the true cost of studying abroad goes far beyond tuition. Living expenses, visa fees, and exchange rate strength all play a defining role in shaping affordability.

By combining data with practical insights, this research provides a roadmap for students, consultants, and institutions to make financially smart, data-driven education choices.

Final thought: Whether you're a student, consultant, or policymaker — the question is no longer *"Can I afford to study abroad?"*

It's now *"Where and how can I make the smartest investment in my education?"*

REFERENCES & APPENDICES

1. Kaggle: Cost of International Education Dataset. Available at: https://www.kaggle.com/datasets/adilshamim8/cost-of-international-education (Accessed: 7th October 2025).
2. Namrata Sukhtankar, 2023. *Cost Of Living In The USA For Students 2025* Available at: https://uniacco.com/blog/cost-of-living-in-the-usa (Accessed: 7th October 2025).
3. Data Pandas, 2025. *Cost Of Living By State.* Available at: https://www.datapandas.org/ranking/cost-of-living-by-state (Accessed: 7th October 2025).